

A NEW SPECIES OF *HIPPOPUS* (BIVALVIA: TRIDACNIDAE)

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## ABSTRACT

*Hippopus porcellanus* n. sp. is described from Sibutu Island, Sulu Archipelago, Philippines, bringing the known members of the genus *Hippopus* to 3, including *H. hippopus* (Linné, 1758), Recent, Indo-Pacific, and *H. gunteri* Mansfield, 1937, Fossil, Lower Miocene of Florida.

For several years shell dealers have received large numbers of a rather distinctive giant clam belonging to the genus *Hippopus* which they refer to as the "China Clam", and which they consider to be distinct from the "Horse's Hoof" or "Bear Paw", *Hippopus hippopus* (Linné, 1758). It is much thinner and smoother than the usually elaborately sculptured *H. hippopus*, and lacks most of the characteristic strawberry color of the latter. When I reviewed the classification of Tridacnidae this phenotype was believed to intergrade completely with *H. hippopus* (Rosewater, 1965, p. 361). Recent examination of nearly two dozen specimens of the "China Clam" and comparison with *H. hippopus* persuades me that they are separate species.

*Hippopus porcellanus* new species  
(Figs. 1-4)

**Description:** Shell reaching 216 mm (about 8 1/2 inches) in length, semicircular in outline and globose in shape; usually only moderately inflated; with valves closed byssal orifice is very narrowly gaping. Valves not excessively heavy, markedly translucent, colored occasionally with weak strawberry blotches arranged concentrically or scattered; color of interior porcellaneous, of exterior grayish white. Surface of valves remarkably clean, except for scattered coralline algae and debris. Primary radial sculpture consisting of 13 or 14 low rib-like folds distributed over surface of valve, extending onto ventral slope where they become obsolete. Secondary radial sculpture consisting of low riblets which are nearly obsolete on primary folds

but are more prominent in their interstices. Riblets varying somewhat in width, usually lacking spines or evidencing only microscopic concentric imbrications. A few low tubular spines present on primary fold bordering ventral slope and occasionally on ventral portions of other primary folds; folds usually smooth dorsally. Concentric sculpture consisting of microscopic, wavy, imbricate lines of growth. Dorsal margin undulate, with series of 8-9 rounded to squarish, medially projecting, interdigitating processes representing extremities of rib interstices. Hinge line usually longer than half the length of valve. One oblong cardinal tooth in each valve; 2 elongate posterior laterals in right and a single moderately sharp one in the left valve. Ligament secondarily prosodetic. Umbos directed postero-medially. Edge of byssal orifice with a series of 8-12 light-yellow, rather poorly developed plicae which remain fairly constant in size or become only slightly larger posteriorly. Ventral slope moderately concave. Hinge plate suffused with orange. Pallial line entire, moderately narrow. Muscle scars central, medium sized; the posterior adductor scar round in both valves, the posterior pedal retractor scar is smaller and elongate, the two extending over portions of two fold interstices in each valve. Area within pallial line, excluding muscle scars, dull; pallial line, muscle scars and areas to edge of shell shiny. Prodissoconch unknown.

The anatomy and life history of this species are unknown. Following my studies (Rosewater, 1965) several persons have achieved success in studying the spawning and development of *Hip-*



FIGS. 1-4. *Hippopus porcellanus* new species. Holotype ANSP 246600, from Sibutu Id., Philippines. 1, external view right valve; 2, internal view right valve, muscle scars and pallial line outlined; 3, dorsal view; 4, ventral view (for measurements see under Types).

*popus hippopus* (Jameson, 1976; Gwyther and Munro, 1981).

**Measurements** (mm): Tridacnidae are indiscriminately inequivalved, and the figures given under "length" and "height" are always the maximum measurement. "Width" is the greatest distance through opposed valves.

Locality (Philippines)	Zamboanga	Sibutu Id.	Masbate Id.	Sulu Sea
No. Specimens	10	5	1	6
Range of Lengths	87-138	75-157	216	93-214
Range of Heights	60-105	53-115	167	74-150
Range of Widths	46-78	35-101	141	48-126
Range of Weights, Left Valve (grams)	27-142	11-221	479	38-399
Average Width/Length	.60	.60	.66	.58

**Types:** Holotype ANSP (The Academy of Natural Sciences of Philadelphia) 246600, 157 mm length, 113 mm height; 3 paratypes ANSP 354770, 155 mm length, 115 mm height, 101 mm length, 81 mm height, and 75 mm length, 53 mm height; 1 paratype USNM (National Museum of Natural History, Washington, D.C.) 807720, 133 mm length, 98 mm height.

**Type locality:** Sibutu Island, Tawi Tawi Group, Sulu Archipelago, Philippines (4°46'N; 119°29'E), du Pont-Academy Expedition, 1958.

**Other Material Examined:** ANSP 209699 Zamboanga, Mindanao Island, Philippines, ex. A. B. Bronson, 1956 (10 specimens, see Measurements); ANSP 228977, Masbate Island, Philippines, du Pont-Academy Expedition, 1958 (1 specimen, see Measurements); USNM, "Sulu Sea", ex. A. D'Attilio and John Root (6 specimens, see Measurements).

**Distribution:** Philippines, mostly known from the Sulu Archipelago; 1 specimen from Masbate Island, central Philippines.

**Etymology:** "porcellanus", an adjectival name referring to the porcelain-like appearance of the shell of this species.

**Remarks:** Shells of this new species are consistently smoother, more semicircular in outline, proportionately lighter in weight and thinner than *H. hippopus* (see figs. 1-4). When viewed apart from the latter they present a rather ro-

tund appearance although measurements show they are no more obese, but, in fact, are often less wide. Compared with *H. hippopus*, *H. porcellanus* has a very narrow byssal orifice, with the plicae less well developed and lighter in color (fig. 4). The single posterior lateral tooth of the left valve is moderately sharp in *H. porcellanus* while in *H. hippopus* it is blunt.

The only other large bivalve species with which *H. porcellanus* is likely to be confused is *Tridacna derasa* (Röding, 1798). Specimens of *T. derasa*, of the same length as *H. porcellanus* (200 mm+), are smooth, may be similarly semicircular in outline and exhibit similar obesity. It is quite likely that living *T. derasa* has a considerably more colorful mantle, that of *H. hippopus*, at any rate, being rather sombre olive. The shell of *T. derasa* is even smoother than that of *H. porcellanus*, lacking in development of tubular spines and having low primary and secondary folds, although sometimes developing strong, continuous, undulate concentric ridges (Rosewater, 1965, pl. 281, fig. 1). Shells of *T. derasa* lack the orange and yellow coloration present in *Hippopus* in the areas of hinge and byssal orifice. Byssal plicae number 6-7, are low and elongate to nearly obsolete in *T. derasa* while in *H. porcellanus* they are shorter and number from 8-12. The posterior adductor muscle/posterior pedal retractor scar complex is comparatively larger in *T. derasa* and its umbos tend to be less distinctly convoluted than in *H. porcellanus*, although size for size the former tends to have a heavier shell.

I originally thought that *H. porcellanus* differed from *H. hippopus* subspecifically rather than specifically. As subspecies the two would normally have more or less discreet geographic ranges. While it appears that *H. porcellanus* lives mostly in the southern Philippines, more precisely the southern Sulu Sea, a specimen has been reported from Masbate Id. in the central Philippines. Furthermore, *H. hippopus* is distributed in the same area besides having a more extensive range in the western Pacific. Since the ranges of the two species seem not to be in any real way mutually exclusive, the subspecific status seems doubtful, and they are here considered to be separate species within the

genus *Hippopus*. It is quite obvious that the known geographic range of *H. porcellanus* is considerably more restricted than that of *H. hippopus* (see Rosewater, 1965, pl. 272).

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## OCCURRENCE OF THE ASIATIC CLAM *CORBICULA FLUMINEA* IN THE RARITAN RIVER, NEW JERSEY<sup>1</sup>

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#### ABSTRACT

*The mid-Atlantic range of the Asiatic clam, Corbicula fluminea (Müller, 1774) is extended to the Raritan River in central New Jersey. A successfully breeding population was found in the nontidal region near a water supply intake. These clams have also colonized far upstream into the South Branch of the Raritan but not the North Branch. No reason for this difference is known. Living specimens were found downstream in the tidal portion of the river which is freshwater but polluted. There was no evidence of reproduction in this region of the river.*

Since it was first observed in this country in the Columbia River, Washington (Dundee and Dundee, 1958) the Asiatic clam, *Corbicula fluminea* (Müller, 1774) (alias *manilensis* Philippi) has spread rapidly into many river systems across the United States (Sinclair, 1971). Extension of its range to the mid-Atlantic region was documented by Diaz (1974) in the James River,

Virginia, and by Fuller and Powell (1973) in the Delaware River between Philadelphia, Pennsylvania and Trenton, New Jersey. Diaz estimated the year of introduction in the James River to be 1968 and Fuller and Powell concluded that *Corbicula* was present in the Delaware River since at least 1971 or 1970. Crumb (1977) later reported it in the Delaware River between Trenton and Burlington in September 1971.

On March 26, 1981 many empty shells and a few living *Corbicula* were collected from a tidal (but freshwater) region of the Raritan River

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